

REMARKS

The present Amendment is in response to the Examiner's Office Action mailed March 6, 2008. Claims 11-13, 15-18, and 20-30 are now pending, of which claims 17 and 18 have been allowed.

Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding.

I. CLAIM REJECTIONS

A. Rejection Under 35 U.S.C. § 103

The Examiner rejects claims 11-13 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* (U.S. Patent No. 4,450,460) in view of *Cho et al.* (U.S. Patent No. 5,633,706). The Examiner rejects claim 15 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho* further in view of *Ibsen et al.* (U.S. Publication No. 2003/0067645). The Examiner rejects claim 16 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho* further in view of *Martensson* (U.S. Publication No. 2004/0213527). The Examiner rejects claims 20 and 29 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho* and *Martensson* further in view of *Abe* (U.S. Publication No. 2004/0246495). The Examiner rejects claim 21 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho* further in view of *Sauter* (U.S. Patent No. 6,111,692) and *Billmers* (U.S. Patent No. 6,724,467). The Examiner rejects claim 22 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho*, *Sauter*, and *Billmers*, further in view of *Jupp et al.* (U.S. Publication No.

2004/0130702). The Examiner rejects claims 23 and 24 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho*, *Sauter*, and *Billmers*, further in view of *Popescu et al.* (U.S. Patent No 6,181,412). The Examiner rejects claims 26-28 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho* and *Sauter*. The Examiner rejects claims 23 and 24 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Cho*, *Sauter*, further in view of *Noriaki et al.* (Improvement of laser-beam). The Examiner rejects claim 30 under 35 U.S.C. § 103 as being unpatentable over *Morimoto* in view of *Martensson* further in view of *Abe*.

The Applicant respectfully traverses the rejections of the claims as (A) the recited elements are not merely one of multiple design choices with no new or unexpected result. Rather, the claimed combination of elements is a specific system that is designed for maximum reflection of high intensity radiation while keeping a detectable amount of background radiation from which the LIDAR signal is obtained. Such arrangement is in direct contrast to the conclusory statement that such arrangement is an obvious matter of design choice with no new or unexpected result. The Applicant further traverses the rejections of the claims as (B) the Examiner has failed to set forth concrete evidence of a predictable reason for the proposed combination of references. The Applicant further traverses the rejections of the claims as (C) the Examiner has failed to address every element of the claims.

According to the applicable statute, a claimed invention is unpatentable for obviousness if the differences between it and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103(a) (2005); *Graham v. John Deere Co.*, 383 U.S. 1, 14 (1966); MPEP 2142. Obviousness is a legal question based on underlying factual determinations including: (1) the scope and content of the prior art, including what that prior art teaches explicitly and inherently; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. *Graham*, 383 U.S. at 17-18; *In re Dembiczak*, 175 F.3d 994, 998 (Fed. Cir. 1999).

A. The claimed elements are Not Merely One of Multiple Design Choices with No New or Unexpected Result

The Examiner states that it would be obvious to modify *Morimoto* to include the spectral filter being an infrared filter because it would be one of multiple design choices with no new or

unexpected result. However, this statement does not take into account that the filter has to be reflective in a way that provides screening. Furthermore, this effect would in fact lead to a new result, i.e. the selection of the used wavelength range together with the thermal shielding.

In the current application, the arrangement of the different filter components is not an arbitrary setup but a specific system which is designed for maximum reflection of high intensity radiation while keeping a detectable amount of radiation for measuring purposes.

As discussed on page 2 of the specification, this setup is a prerequisite for some applications, e.g. a satellite which scans the topography of a celestial body with LIDAR from a circumpolar orbit. Such a satellite should in principle be capable of handling the different boundary conditions of the day and night side of a planet. The day side gives an extreme proportion of background radiation from which the LIDAR signal to be used has to be obtained.

Therefore, according to the Applicant's teachings, the multi-stage filter concept is used. The UV filter component 1 consists of a dielectric multi-layer coating on that side of the instrument aperture which faces the outside. The filter component can, for example, be mounted as a layer on a ZnSe plate in the aperture, wavelengths below 600 nm being reflected without absorption but longer wavelengths being transmitted without absorption.

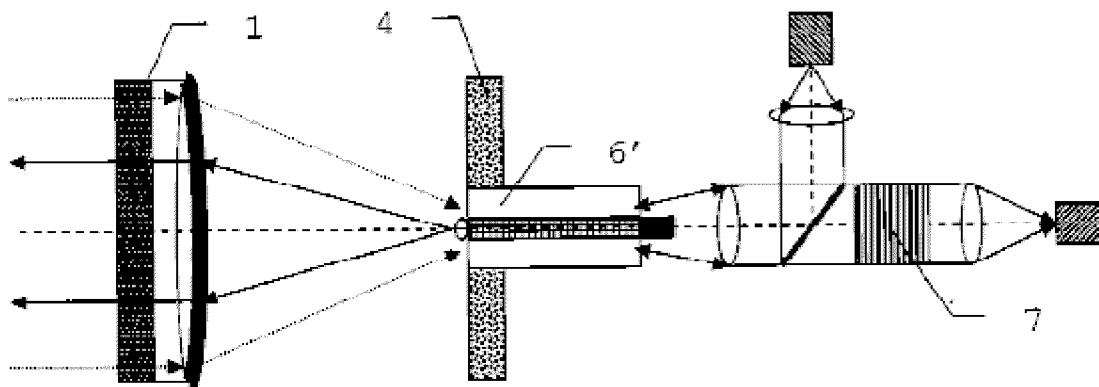


Fig. 3

The IR filter component 4 is located downstream of the UV filter component and has a gold mirror which does not absorb for this wavelength band.

The spatial filter component 6' is provided by direct or indirect focusing of the radiation onto the sensor used for reception, the sensor surface acting as a field stop. The gold layer of the IR filter component is then arranged in or close to the focal plane of the lens so that, in

cooperation, any radiation incident outside the nadir direction is reflected. As a significant part of the radiation is in the IR range, and important feature is the arrangement of the IR and spatial filters.

The spectrally narrowband filter component 7 can be very compact, for example in the form of a Fabry-Perot interferometer or fibre grating, having a bandwidth of < 1 nm about the LIDAR wavelength, so that any radiation outside this range is suppressed in the nadir direction.

By the multi-stage selection of the incident radiation, the useful radiation of the LIDAR system can be separated from the background radiation, heating of the arrangement being avoided by reflection. Particularly in the case of satellites, this “thermal load” is a **critical** parameter which has to be minimized since the necessary cooling power has to be taken from the energy supply present.

Quite simply, as addressed by the Applicant’s arrangement, all these obstacles mean that the setup has to fulfill two different and contradicting purposes: (1) shielding and reflecting radiation in order to reduce thermal load, and (2) transmitting radiation in order to allow precise measurements. Therefore, as set forth above, the claimed elements, and claimed sequence of elements, are not an obvious design choice. Rather, such claimed elements result in several unexpected advantages and address several particular problems in the particular applications identified by the Applicants.

Therefore, the Applicant respectfully requests that the rejections of claims 11-13, 15-18, and 20-30 be withdrawn for at least these reasons.

B. No Concrete Evidence of the Rationales Set forth in the Office Action

As with the previous Office Action of April 6, 2007, the current Office Action has not set forth concrete evidence of a predictable reason for the proposed combination of references.

“The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious.” MPEP 2142 (2007) (emphasis added). Analysis supporting a rejection under 35 U.S.C. §103(a) should be made explicit. *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, (2007) (Emphasis added). Moreover, the Patent Office must identify a reason (such as motivation) why a person of ordinary skill in the art at the time of the invention would have combined the prior art elements in the manner claimed. *Id.* “[R]ejections on obviousness grounds **cannot be sustained by mere conclusory statements**; instead, there must be some articulated reasoning with some rational underpinning to support the

legal conclusion of obviousness.” *KSR*, quoting *In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) (emphasis added); see also MPEP 2142. Finally, a court should be wary of reasoning based on hindsight. See *Graham*, 383 U.S. at 36.

In each combination of references used to reject claims 11-13, 15-18, and 20-30 the Examiner indicates that such elements missing from the base reference(s) would have been obvious “because it is one of multiple design choices with no new or unexpected result.” The Examiner provides no evidence of the multiple design choices, does not identify the expected results referred to, nor any evidence that such design choices or expected results would have been predictable at the time of the invention. Rather, these conclusory statements are examples of the type of conclusory statements prohibited by the United States Supreme Court in *KSR*.

Moreover, other U.S. Supreme Court cases such as *Adams* (1966) demonstrated that “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” (Emphasis added) It is never appropriate to rely solely on “common knowledge” in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based. *In re Zurko*, 258 F.3d at 1385 (“[T]he Board cannot simply reach conclusions based on its own understanding or experience—or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings.”). *In re Lee*, 277 F.3d 1338, 1344-45 (Fed. Cir. 2002)

Because the Office Action is devoid of articulated reasoning with some concrete evidence of a rational underpinning to support the legal conclusion of obviousness, a *prima facie* case of obviousness has not been set forward. As such, the Applicant respectfully requests that the rejections of claims 1-13, 15, 16, and 20-30 be withdrawn.

Further, as previously noted and requested, it appears that the Examiner is relying on personal knowledge as a basis for rejecting claims 1-13, 15, 16, and 20-30 as there is no concrete evidence of a predictable reason cited in the Office Action. In view of the foregoing, and pursuant to 37 C.F.R. 1.104(d)(2), Applicant hereby respectfully requests an Examiner affidavit that: (i) specifically identifies any and all references(s), other than those that have been specifically cited by the Examiner, upon which the obviousness rejection of claims 5, 1-13, 15, 16, and 20-30 is based; and (ii) provides complete details concerning the reasoning and analysis

of the Examiner concerning those references as those references are purported to apply to the rejection of claims 1-13, 15, 16, and 20-30.

If the origin of a predictable reason, such as motivation, set forth for the proposed combinations is in the references then the Applicants request that this origin be set forth by the Patent Office as suggested by MPEP 2144.08 III which states, “[w]here applicable, the finding should clearly articulate which portions of the reference support any rejection. Explicit findings on motivation or suggestion to select the claimed invention should also be articulated in order to support a 35 U.S.C. 103 ground of rejection. *Dillon*, 919 F.2d at 693, 16 USPQ2d at 1901; *In re Mills*, 916 F.2d 680, 683, 16 USPQ2d 1430, 1433 (Fed. Cir. 1990). Conclusory statements of similarity or motivation, without any articulated rationale or evidentiary support, do not constitute sufficient factual findings.” (Emphasis added).

C. The Examiner Has Failed to Address Every Element of the Claims

Claim 11, for example, includes the element:

... a first spectral filter component located upstream of the spatial filter component in the receiving direction and reflecting in the infrared range for screening background radiation and for avoiding or reducing heating-up of the distance meter.

(Emphasis added).

These emphasized elements of claim 11 have not been addressed by the Office Action and do not find disclosure in the references cited. More specifically, claim 11 requires a particular sequence of elements – that is claim 11 requires that the first spectral component be located upstream of the spatial filter component. In the references neither reflection of the infrared radiation, nor the specific capability of screening background radiation or avoiding or reducing heating-up is disclosed.

While the Examiner alleges that the references teach the first spectral filter component and the spatial filter component, the Examiner has not addressed the claimed sequence of elements. As previously discussed the claimed sequence of elements is not an arbitrary sequence. Rather, the claimed sequence of elements results in new and unobvious results of maximum reflection of high intensity radiation while keeping a detectable amount of background radiation from which the LIDAR signal is obtained.

Moreover, the claimed arrangement further results in an important reduction of heating-up of the distance meter, which also was not addressed in the Office Action, nor does this feature appear to be disclosed by the references of record. This claimed feature also results in an improvement over the art of record where reduction of heating-up can have deleterious effects in various applications, in particular in airborne or spaceborne applications where additional cooling apparatus add to the weight that must be carried by the airborne or spaceborne systems. Therefore, the particular sequence and combination of features set forth in claim 11 exemplify a substantial improvement over the teaching cited in the references. As such, the Applicant respectfully requests that the rejection of claim 11 be withdrawn. Claims 11-13, 15-18, and 20-30 depend from claim 11. Therefore, the Applicant respectfully requests that the rejection of claims 11-13, 15-18, and 20-30 be withdrawn for at least the same reasons as claim 11.

CONCLUSION

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 4th day of June, 2008.

Respectfully submitted,

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